

FEDEROVICI, C., ing.

Optimum structure of the transporting technological process  
in reed exploitation. Cel hirtle 11 no.2:41-48 F'62.

FEDEROWICZ, Wladyslaw, mgr., ins.

Methods of combating accidents in servicing electric installations in Poland. Wlad elektrotech 28 no.11/12:330-334 N-D '61.

1. Przewodniczacy Centralnej Komisji Ochrony Pracy, Stowarzyszenie Elektrykow Polskich, Warszawa.

FEDEROWICZ, Wladyslaw, mgr., inż.

Modern methods for industrial safety at electric installations.  
Wiad elektrot 30 no.3:70-73 '62.

1. Przewodniczacy Centralnej Komisji Technicznej Ochrony Pracy  
Stowarzyszenia Elektrykow Polskich.

FEDEROWSKI, W.

"Wages for work connected with the reconstruction of agricultural system." p. 47  
(Przegląd Geodezyjny, Vol 9, No 2, Feb 1953, Warszawa)

SO: Monthly List of East European Accessions, Vol <sup>2</sup> <sup>9</sup> ~~IX~~, No ~~IX~~, Library of Congress <sup>Sept 53</sup> ~~XXXXXX~~ Uncl

FEDEROWSKI, W.

FEDEROWSKI, W., Supplementary surveying of state farms. p. 181.

Vol. 11, no. 6, June 1955, Warszawa, Poland. SCIENCE

SO: Monthly List of East European Accessions (EMAL), LC, Vol. 5, No. 2 Feb. 1956

USSR/Human and Animal Physiology - (Normal and Pathological).  
Nervous System. Electroencephalogram of Man.

T

Abs Jour : Ref Zhur Biol., No 4, 1959, 17922

Author : Peymer, N.A., Fedeyeva, A.A.

Inst : Military-Medical Academy

itle : Changes of Electroencephalogram in the Process of Con-  
ditioned-Reflexory Activity in Patients with Closed  
Trauma of the Brain.

Orig Pub : Tr. Voen-med. akad., 1957, 74, 286-293

Abstract : In comparison with healthy people, patients with trauma-  
tic encephalopathy had a reaction to an indifferent sti-  
mus that was more prolonged (10 sec) and stable (extin-  
guishes by 8-10 test). The transformation of the stimu-  
lus into a conditioned stimulus induced the same changes  
as well as the appearance of high-amplitude slow waves

Card 1/2

USSR/Human and Animal Physiology - (Normal and Pathological).  
Nervous System. Electroencephalogram of Man.

T

Abs Jour : Ref Zhur Biol., No 4, 1959, 17922

and "ejections", especially strongly expressed in diffe-  
rentiated stimuli. To these changes corresponded a lar-  
ge latent period and prolonged character of motor reac-  
tion, intersignal reaction and a frequently encountered  
inability to produce differentiation. -- T.G. Beteleva

Card 2/2

KAYBICHEVA, M.N., TULIN, N.A., BASTRIKOV, N.P., FEDNYEVA, N.I.

Wall blocks of electric steel-smelting furnaces made of magnesite-  
chromite brick wastes. Ogneupory 25 no.4:186-188 '60. (MIRA 13:8)  
(Firebrick--Testing) (Chelyabinsk--Smelting furnaces)

FEDICHKIN, G. Ya.

Methods of growing hemp and ambary in the zone of light Sierozems  
of the Chu Valley. Trudy Otd.pochv.AN Kir.SSR no.5:63-71 '55.  
(MLRA 9:11)

(Chu Valley--Sierozem soils) (Hemp) (Ambary hemp)



FEDICHKIN, I. K.

36676. Fedichkin, I. K. Opyt stroitelstva zemlyanoy plotiny na moshchnom  
sloye razzhizhennogo ila. Gidrotekhnika i melioratsiya, 1949, no. 5, c. 50-59

SO: Letopis' Zhurnal'nykh Statey, Vol. 50, Moskva, 1949

FEDICHKIN, I.K., prof.; OVCHARENKO, I.KH., inzh.; AVTONOMOV, B.P., inzh.;  
KONCHKIN, F.G., inzh.

Features of water intake from a river during the low-water period  
by port-type water intakes. Izv. vys. ucheb. zav.; energ. 6  
no.6:111-114 Je '63. (MIRA 16:11)

1. Novocherkasskiy inzhenerno-meliorativnyy institut.  
Predstavlena nauchno-tekhnikeskoy konferentsiyey.

FEDICHKIN, N., red.; GOLIN, A., tekhn. red.

[Use polymers in production; collection of materials of  
the Scientific and Technological Conference on the Use of  
Polymers in Industry held in Penza] Polimery - v proizvod-  
stvo; sbornik materialov. Penza, Sovet. nar. khcz. Pen-  
zenskogo ekon. administrativnogo raiona, 1962. 110 p.  
(MIRA 17:3)

1. Nauchno-tekhnicheskaya konferentsiya po voprosu primene-  
niya polimerov v promyshlennosti, Penza.

| 1ST AND 2ND ORDERS   |                    |  |  |  |  |  |  |  |  | PROCESSES AND PROPERTIES INDEX |  |  |  |  |  |  |  |  |  | 1ST AND 2ND ORDERS |  |  |  |  |  |  |  |  |  |           |                    |           |                    |
|--|--------------------|--|--|--|--|--|--|--|--|--------------------------------|--|--|--|--|--|--|--|--|--|--------------------|--|--|--|--|--|--|--|--|--|-----------|--------------------|-----------|--------------------|
| <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <h2 style="margin: 0;">FEDICHKINA, T. L.</h2> </div> <div style="text-align: right; margin-top: 20px;">7</div> </div> <div style="margin-bottom: 10px;"> <span style="font-size: 2em; margin-right: 20px;">Ca</span> </div> <div style="border: 1px solid black; padding: 10px;"> <p>Detection of nitrotoluene in nitrobenzene and of toluene in benzene. I. II. Ya. T. Ekhus and T. L. Fedichkina—<i>Bull. acad. sci. U. R. S. S., Classe sci. chim.</i> 1940; 276-81, 282-7.—The method used by Raikow and Urkevitch (<i>Chem. Ztg.</i> 50, 295 (1906)) for the detection of toluene (I) in benzene (II) is based on the assumption that the mixt. of I and II gives on nitration a mixt. of nitrotoluenes (III) and nitrobenzenes (IV) in which III can be detected since it supposedly gives at ordinary temp. a yellow-brown compd. with pulverized NaOH whereas IV does not react under these conditions. It is shown now, however, that this method is erroneous because neither IV nor any of the 3 isomeric nitrobenzenes gives an immediate yellow-brown coloration with solid NaOH. The color observed by R. and U. is due to the product formed from 1,3-dinitrobenzene (V) and solid NaOH, V being always found among the nitration products of II. A method which allows the detn. of I in II in amts. as low as 0.4% has been developed which is based on the different color reactions given by III, IV and V with solid KOH and petr. ether. Thus a mixt. contg. III, IV, and V gives 3 distinct colored zones with KOH which appear with different velocities.</p> <p style="text-align: right;">(Gertie Brand)</p> </div> <div style="display: flex; justify-content: space-between; align-items: center; margin-top: 10px;"> <div style="border: 1px solid black; padding: 5px; width: 60%;"> <p>ASB. 554 METALLURGICAL LITERATURE CLASSIFICATION</p> <p>33000 SYNOBISIM</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">330000 01</td> <td style="width: 50%; text-align: center;">330000 011 000 001</td> </tr> <tr> <td style="width: 50%; text-align: center;">330000 01</td> <td style="width: 50%; text-align: center;">330000 011 000 001</td> </tr> </table> </div> <div style="width: 35%; text-align: right;"> <p>330000 011 000 001</p> <p>330000 011 000 001</p> </div> </div> |                    |  |  |  |  |  |  |  |  |                                |  |  |  |  |  |  |  |  |  |                    |  |  |  |  |  |  |  |  |  | 330000 01 | 330000 011 000 001 | 330000 01 | 330000 011 000 001 |
| 330000 01  | 330000 011 000 001 |  |  |  |  |  |  |  |  |                                |  |  |  |  |  |  |  |  |  |                    |  |  |  |  |  |  |  |  |  |           |                    |           |                    |
| 330000 01  | 330000 011 000 001 |  |  |  |  |  |  |  |  |                                |  |  |  |  |  |  |  |  |  |                    |  |  |  |  |  |  |  |  |  |           |                    |           |                    |

| LIST AND INDEX                                     |  |  |  |  |  |  |  |  |  | PROCESSES AND PROPERTIES INDEX  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|---|--|--|--|--|--|--|--|--|--|
| FEDICHKINA, T. I.                                  |  |  |  |  |  |  |  |  |  | 17  |  |  |  |  |  |  |  |  |  |
| CA   |  |  |  |  |  |  |  |  |  | Sulfanilamide. G. I. Braz and T. I. Fedichkina. U.S.S.R. 64,306, Feb. 28, 1945. Sulfanilamide is obtained by heating formylsulfanilamide with H <sub>2</sub> O or an aq. soln. of NH <sub>3</sub> at ordinary or elevated pressure. M. Hoch |  |  |  |  |  |  |  |  |  |
| ASB-LLA METALLURGICAL LITERATURE CLASSIFICATION    |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |
| SOURCE SYMBOLS                                     |  |  |  |  |  |  |  |  |  | COLLATION   |  |  |  |  |  |  |  |  |  |
| SOURCE NO.   |  |  |  |  |  |  |  |  |  | COLLATION NO.   |  |  |  |  |  |  |  |  |  |
| 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 |  |  |  |  |  |  |  |  |  | 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20  |  |  |  |  |  |  |  |  |  |

FEDIK, A

27-8-12/32

SUBJECT: USSR/Agricultural Schooling

AUTHOR: Fedik, A., Deputy Director of Agricultural Mechanization  
School #4, (Vinnitsa Oblast')

TITLE: Large Training Farms are Required (Nuzhny Krupnyye Uchebnyye  
Khozyaystva)

PERIODICAL: Professional'no - Tekhnicheskoye Obrazovaniye, Aug 1957, #8  
pp 19-20 (USSR)

ABSTRACT: The article deals with questions of training students in agricultural mechanization schools and supports the assignment of larger training farms, the size depending on the number of students and the kind of soil.

INSTITUTION: Uchilishche Mekhanizatsiyi Sel'skogo Khozyaystva # 4 (Vinnitskaya Oblast') (Agricultural Mechanization School #4 (Vinnitsa Province)).

PRESENTED BY:

SUBMITTED:

AVAILABLE: At the Library of Congress  
Card 1/1

16.7300

S/258/62/002/002/009/018  
1028/1228

AUTHOR: Fedik, I. I. (Moscow)

TITLE: Tension of discs of a plastically non-uniform material

PERIODICAL: Inzhenernyy zhurnal, v. 2, no. 2, 1962, 324-331

TEXT: A disc of a material having a yield-point which is a function of the distance from the surface is considered. As plasticity condition is taken St-Venant's condition. The equilibrium equation for discs of variable thickness and the equation of consistency of deformations are determined. The set of equations is then integrated for discs of uniform and variable thickness: the cases of elastic, plastic-elastic, and plastic zones are treated separately. The load  $P_{max}$  at which elastic deformations disappear completely can be determined from the equations obtained. Tables of  $P_{max}$  for both fixed and variable yield-point are given. There are 2 figures and 2 tables.

VB

ASSOCIATION: Institut mekhaniki AN SSSR (Institute of Mechanics AS USSR)

SUBMITTED: November 28, 1961

Card 1/1

S/879/62/000/000/012/088  
D234/D308

AUTHOR: Fedik, I. I. (Moscow)

TITLE: Momentless orthotropic shells of revolution subject to large deformations

SOURCE: Teoriya plastin i obolochek; trudy II Vsesoyuznoy konferentsii, L'vov, 15-21 sentyabrya 1961 g. Kiev, Izd-vo AN USSR, 1962, 111-114

TEXT: The author formulates the equations of equilibrium

$$\frac{d\psi}{dx} = \frac{\cos \psi}{\cos \varphi} h^m \left( \frac{x}{\xi} \right)^n ;$$

$$\frac{dh}{dx} = - \frac{h}{x} \frac{a \ln \frac{x}{\xi} + b \ln h + c \left( 1 - \frac{x}{\xi} \frac{d\xi}{dx} \right)}{1 + c \ln \frac{x}{\xi} + \ln h} ;$$

Card 1/2



Momentless orthotropic ...

S/879/62/000/000/012/038  
D234/D308

$$\cos \phi = \sqrt{1 - \left[ \frac{Mx}{h \ln h + c \ln \frac{x}{\xi}} \right]^2} \quad (4)$$

(m, n, a, b, c are expressions in terms of Poisson's coefficients) and applies them to a spherical shell and to a cylindrical shell with rigid end plates. Some special cases are discussed, in particular the initial form of a shell which becomes spherical when subject to pressure. There are 2 figures.

Card 2/2

FEDIK, I.I. (Moskva)

Stressed state of disks made of plastically nonhomogeneous material. Inzh.zhur. 2 no.2:324-331 '62. (MIRA 15:6)

1. Institut mekhaniki AN SSSR.

(Strains and stresses)

FEDIKOV, N.P.

Stand for washing samples of deep-sea bottom fauna. Trudy Inst.  
ocean. 41:254-256 '60. (MIRA 13:9)  
(Pacific Ocean—Dredging (Biology))

FEDIN, A.A.

Improving the radio circuit for recording the instance of explosion.  
Geofiz. razved. no.2:119-120 '60. (MIRA13:12)  
(Radio in prospecting)

FEDIN, A. A.

FEDIN, A. A.: "The effect of autoclave processing on the properties of lime-clay materials of plastic formation". Moscow, 1955. Min Higher Education USSR. Moscow Order of Labor Red Banner Construction Engineering Inst imeni V. V. Kuybyshev. (Dissertations for the Degree of Candidate of Technical Sciences)

SO: Knizhnaya letopis', No. 52, 24 December, 1955. Moscow.

FEDIN, A.A., kand.tekhn.nauk; BERDYSHEV, S.K., inzh.; KALASHNIKOV, A.V.,  
inzh.; KUZNETSOVA, L.S., inzh.

Large aerated silicate blocks. Stroil. mat. 6 no.12:22-23 D '60.  
(MIRA 13:11)

(Sand-lime products)

FEDIN, A.A., kand. tekhn.nauk; GHERNYSHOV, Ye.M., inzh.

Improving techniques and eliminating flaws in the manufacture of  
air-entrained silicate products. Stroi. mat. 8 no.4:25-28 Ap  
'62. (MIRA 15:8)

(Sand-lime products)

VLASYUK, P.A., akademik, red.; ROMANENKO, I.N., akademik, red.; RODIONOV, S.P., red.; TYULENEV, red.; PSHENICHNYI, P.D., akademik, red.; DAVYDOV, kand.ekon.nauk, red.; KUGUKALO, I.A., kand.ekon.nauk; BEREZIKOV, V.S., red.; FEDIN, A.D., red.; KOZAKEVICH, T.A., red. izd-va; SIVACHENKO, Ye.K., tekhn.red.

[Proceedings of the Conference on Problems in Developing Production in Polesye] Konferentsiia po voprosam razvitiia proizvoditel'nykh sil Poles'ia USSR. Kiev, 1955. Pt.3 [Problems in the development of agriculture in Polesye; stockbreeding and feed supply, land improvement and reclamation of swamps] Voprosy razvitiia sel'skogo khoziaistva Poles'ia; zhivotnovodstvo i kormovaia baza, melioratsiia i osvoenie bolot. Kiev, Izd-vo Akad. nauk USSR, 1958. 208 p. (MIRA 12:1)

1. AN USSR; Ukrainskaya akademiya sel'skokhoz.nauk i Vsesoyuznaya akademiya sel'skokhoz.nauk im. V.I. Lenina (for Vlasyuk). 2. Ukrainskaya akademiya sel'skokhoz.nauk, chlen-korrespondent Vsesoyuznoy akademii sel'skokhoz. nauk im. V.I. Lenina (for Romanenko). 3. Chlen-korrespondent AN USSR (for Rodionov, Tyulenev). 4. Institut fiziologii rasteniy i agrokhimii AN USSR (for Tyulenev). 5. Ukrainskaya akademiya sel'skokh. nauk (for Pshenichnyy). 6. Zamestitel' nachal'nika otdela svodnykh perspektivnykh planov Gosplana USSR (for Beresikov). 7. Nachal'nik podotdela sel'skogo khozyaystva otdela svodnykh perspektivnykh planov Gosplana USSR (for Fedin). (Polesye--Agriculture)



LUK'YANOV, V.B.; MAKAROV, A.V.; FEDIN, A.D.

Mathematical statistics in the control of radiometric apparatus.  
Zav.lab. 29 no.7:844-849 '63. (MIRA 16:8)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova.  
(Radiometry) (Mathematical statistics)

SEGEYEV, N.N.; IVANOV, K.V.; FEDIN, A.F.; KRASOVSKIY, Yu.P.; TKACHENKO, A.P.

Rapid building of the Pervomayskiy open-pit mine in the Severnoye  
Mining and Ore Dressing Combine. Met. i gornorud. prom. no. 3:73-74  
My-Je '63. (MIRA 17:1)

FEDIN, A. Kh.

Accumulation of nitrates in the Batum soils. A. Kh.  
 Fedin, *Sov. Subtropiki* 1938, No. 12, 27-8; *Khim.  
 Ref. Zhur.* 2, No. 5, 55(1939). - In mulched and  
 drained soils (a ditch around the lemon tree with a radius  
 of 1 m.) the content of nitrates was greater than in un-  
 mulched and undrained lemon tree soils. In the first  
 case the amt. of nitrates remained at a fairly const. level,  
 in the second case sharp variations were observed, espe-  
 cially during the autumn. (inter per) W. R. H.

ASD 55.8 DETAILING LITERATURE CLASSIFICATION

FEDIN, A. Kh.

"Maintaining the Viability of Preserved Potato Berries," Usp. sovr. biol.,  
33, No.2, 1952

FEDIN, A. Kh.

"A New Genus of Fossil Conifers Papaninia Involucrata Fedin,"

Dokl. Ak. Nauk SSSR, 41, No. 8, 1943 .

FEDIN, A.Ye.

Strength of public influence. Izobr. v SSSR 2 no.6:37-38 Ja '57.  
(Inventions) (Efficiency, Industrial) (MLRA 10:8)

*FEDIN, A. Ye.*

FEDIN, A. Ye.

Visiting innovators. Izobr.v SSSR 3 no.1:34-35 Ja '58. (MIRA 11:1)

1. Nachal'nik Byuro sodeystviya ratsionalizatsii i izobretenel'stva  
Moskovskogo zavoda "Frezer."  
(Inventors)

FEDIN, A. Ye.

Work of the invention section of the factory committee. Isobr. v  
SSSR 3 no.2:41-42 Y '58. (MIRA 11:3)

1. Nachal'nik Byuro sodeystviya ratsionalizatsii i izobretatel'stvu  
zavoda "Frezor."

(Inventions)



SOV/117-58-11-6/36

AUTHORS: Braginskiy, Ye.O., Engineer, Fedin, A.Ye.

TITLE: ~~6000~~  
The Modernization of the Semi-Automatic Milling Machine Model 6V-1 (Modernizatsiya frezernogo poluavtomata modeli 6V-1)

PERIODICAL: Mashinostroitel', 1958, Nr 11, p 8 (USSR)

ABSTRACT: The semi-automatic milling machine model 6B-1 is used for milling screw grooves. In the regulation of the spindle, there were several drawbacks. The modernized spindle has been mounted on rolling bearings. The longitudinal stresses are absorbed by support bearings. In the front support of the spindle, a two-range roller bearing AZ182116 has been inserted which ensures the rigidity of the spindle and the exactness of the revolutions. The clearances between bearings have been abolished. There is 1 diagram.

1. Milling machines--Performance      2. Milling machines---Design

Card 1/1

STROYEV, A. S., BUDZINSKIY, O. Z., IVANOV, A. M. and FEDIN, B. V.  
Institute of Aircraft Materials.

*FEDIN, B. V.*

"Vacuum Arc Melting of Refractory Metals."

paper presented at Second Symposium on the Application of Vacuum in Metallurgy.

*Moscow, 1-6 July 1958*

[illegible]

ZAKHAROVA, Galina Vasil'yevna, kand. tekhn. nauk; POPOV, Ivan Alekseyevich, kand. tekhn. nauk; ZHOROVA, Liliana Pavlovna; FEDIN, Boris Vladimirovich; Prinimali uchastiye: MUKHINA, Z.S., zasl. deyatel' nauki i tekhn. RSFSR; POPOVA, I.A., zasl. deyatel' nauki i tekhn. RSFSR; YEGOROVA, N.D., zasl. deyatel' nauki i tekhn. RSFSR; NIFITINA, Ye.I., zasl. deyatel' nauki i tekhn. RSFSR; ZHEMCHUZHAYAYA, Ye.A., zasl. deyatel' nauki i tekhn. RSFSR; ZHABINA, V.A.; SAVITSKIY, Ye.M., red.; STROYEV, A.S., red.; ARKHANGEL'SKAYA, M.S., red. izd-va; KARASEV, A.I., tekhn. red.

[Niobium and its alloys] Niobii i ego splavy. By G.V.Zakharova i dr. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1961. 368 p. (MIRA 14:12)  
(Niobium)

*FEDIN, B.V.*

PHASE I BOOK EXPLOITATION

SOV/5934

Zakharova, Galina Vasil'yevna, Ivan Alekseyevich Popov, Liliانا Pavlovna Zhorova,  
and Boris Vladimirovich Fedin

Niobiy i yego splavy (Niobium and Its Alloys) Moscow, Metallurgizdat, 1961.  
368 p. Errata slip inserted. 3700 copies printed.

Eds.: Ye. M. Savitskiy and A. S. Stroyev; Ed. of Publishing House: M. S.  
Arkhangel'skaya; Tech. Ed.: A. I. Karasev.

PURPOSE: This book is intended for scientific research workers, metallurgical engineers and designers concerned with the production or utilization of niobium. It may also be useful to students at metallurgical schools of higher education.

COVERAGE: The book reviews the physicochemical and mechanical properties of niobium and niobium alloys, methods of obtaining niobium in powder and consolidated form, the effect of gases on the properties of niobium, the process of niobium oxidation in air, the machining and heat treatment of niobium and its deformation, welding, metallography, and fields of application.

Card 1/1

# Niobium and Its Alloys

SOV/5934

A large volume of material relating to equilibrium diagrams and the properties of niobium alloys is systematized. Chs. I, II, Section 1 of Ch. III, and Chs. IV, and X were written by G.V. Zakharova, Candidate of Technical Sciences; Ch. III, by B. V. Fedin; Ch. VI and VII, by I.A. Popov and L.P. Zhorova, Candidate of Technical Sciences; Ch. VIII, by L.P. Zhorova; Section 1 of Ch. IX, by G.V. Zakharova; Section 2 of Ch. IX, by Z.S. Mukhina, I.A. Popova, N.D. Yegorova, Ye. I. Nikitina, and Ye. A. Zhemchuzhina; and Section 3 of Ch. IX, by V.A. Zhabina. Each chapter is accompanied by references, Soviet and non-Soviet.

## TABLE OF CONTENTS:

|   |    |
|---|----|
| Ch. I. Niobium Minerals and Their Sources                                   | 9  |
| 1. Characteristics of niobium minerals                                      | 9  |
| 2. Raw-material sources   | 10 |
| Ch. II. Production of Niobium Powder and the Processing of Ore Concentrates | 13 |
| 1. Beneficiation of niobium ores  | 13 |
| 2. Separation of titanium, tantalum, and niobium                            | 16 |
| 3. Extraction of powderlike niobium metal                                   | 19 |

Card 2/8

ZHOROVA, Liliانا Pavlovna; KURGANOV, Georgiy Vladimirovich;  
FEDIN, Boris Vladimirovich; FISHER, A.Ya., red.;  
BRYUKHACHEVA, V.V., ved. red.

[Modern niobium alloys, the technology of their production and use; review of foreign techniques] Sovremennye niobievye splavy, tekhnologiya ikh proizvodstva i primeneniye; obzor zarubezhnoi tekhniki. Moskva, GOSINTI, 1962. 27 p. (MIRA 17:5)

SOV/30-58-7-14/49

AUTHOR: Fedin, E. I.

TITLE: A Quadrupole Radiospectroscope (Kvadrupol'nyy radiospektroskop)

PERIODICAL: Vestnik Akademii nauk SSSR, 1958, <sup>18</sup>Nr 7, pp. 79 - 81 (USSR)

ABSTRACT: In 1950, the German scientists G. Demelt, G. Krüger (G. Kryuger) discovered the phenomenon of nuclear quadrupole resonance. The frequency of the quadrupole resonance is sensitive with respect to changes of the chemical properties of the atoms to be investigated and extremely sensitive with respect to insignificant modifications of the crystal lattice. The quadrupole resonance must be considered as the most sensitive amongst all physical methods of investigation with respect to chemical properties. The character of the chemical compound may be concluded from the intensity of the absorption line. In the Soviet Union no work has hitherto been carried out in this field. Recently, the Scientific Council of the Institute of Elemental-organic compounds, AS USSR (Uchenyy sovet Instituta elementoorganicheskikh soedineniy Akademii nauk SSSR) decided to start the investigations in this field. The author of this article - in collaboration with

Card 1/3



A Quadrupole Radiospectroscope

SOV/30-58-7-14/49

G.K.Semin - investigated a series of the schemes in the Laboratory of Organic Chemistry of Crystals and X-Ray Structural Analysis (Laboratoriya organicheskoy kristallogimii i rentgenostrukturnogo analiza) which is under the supervision of A.I. Kitaygorodskiy. A signal of nuclear quadrupole resonance was obtained in the USSR for the first time in summer 1957. After this success, the author - in collaboration with Yu.S.Konstantinov began to design a quadrupole radiospectroscope. The block scheme of this device is given in figure 1 and explained. The method of recording absorption lines of  $Cl^{35}$  in sodium chlorate at room temperature is shown in figure 2. Taking account of the sensitiveness of the quadrupole resonance for any structural changes, it will most probably be possible to apply this method to the control of chemical processes. As a conclusion, the author finds that the time has come to coordinate the work carried out in this field, whereby development would be accelerated. There are 2 figures.

Card 2/3

AUTHOR: Felin, E. I.

SOV/53-66-1-7/11

TITLE: Physical Methods of the Investigation of Molecule Structure  
(Fizicheskiye metody issledovaniya stroyeniya molekul)

PERIODICAL: Uspekhi fizicheskikh nauk, 1958, Vol. 66, Nr 1,  
pp. 131 - 139 (USSR)

ABSTRACT: On May 14 and 15, 1958 at the Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics, AS USSR) an extended session of the Scientific Council took place dealing with the subject: "Theory of Chemical Structure, Kinetics, and Reactivity". The session was summoned by the Otdeloniye khimicheskikh nauk AN SSSR (Department of Chemical Sciences, AS USSR). It was attended by more than 300 scientists. V.N.Kondrat'yev, Member, Academy of Sciences, USSR, gave the opening address. The following lectures were heard: A.I.Kitaygorodskiy, Professor, spoke on radiographical, electronographical, and neutronographical methods for the determination of the molecule structure. B.S.Neporent reported on electron spectroscopical methods of investigating simple and complicated molecules. E. V.Shpol'skiy made a report on the spectroscopical investigation of polyatomic organic

Card 1/4

Physical Methods of the Investigation of Molecule  
Structure

SOV/53-66-1-7/11

molecules and M.M.Sushchinskiy on "Methods of Oscillation Spectroscopy" (historical review: Since the discovery of combination scattering 30 years ago spectra of combination scattering of more than 2000 substances have been investigated and since the discovery of infrared spectroscopy 50 years ago more than 20 000 substances have been examined by means of the infrared spectra). V.I.Dianov-Klovov reported on infrared spectra of condensed gases: An animated discussion followed the first 5 lectures. M.A.Yel'iashevich, the comrades Makarov, Zamkov and Levin, further E.V.Shpol'skiy, N.D. Sokolov, B.S. Neporent, Ya.L.Gol'dfarb and G.L.Slonimskiy participated in this discussion. A.A.Brandt held the following lecture on electrical methods of the investigation of structure, properties, and interaction of the molecules, and comrade Ivanov made a suggestion on a device for the measurement of electrical characteristics in a wide frequency and temperature range. The session on May 15 was opened by A.M.Prokhorov with a lecture on radiospectroscopy and paramagnetic electron resonance (investigation of gases at

Card 2/4

Physical Methods of the Investigation of Molecule  
Structure

S07/53-66-1-7/11

$10^{-12}$  torr). Further L.A. Blyumenfel'd made an account of the application of the paramagnetic electron resonance in biology and in investigations of organic metal compounds (investigations in the laboratory of V.V. Voyevodskiy at the IKhF AN SSSR (Institut khimicheskoy fiziki AN USSR - Institute of Chemical Physics, AS USSR) and in the laboratory of Blyumenfel'd). N.D. Sokolov spoke on the work of the research group Kazan' (Kazanskiy Gosudarstvennyy universitet i Kazanskiy filial AN SSSR - Kazan' State University and Kazan' Branch, AS USSR). B.M. Kozyrev reported on the work performed by the staff of the Laboratory of Paramagnetic Electron Resonance, Sokolov on the application of the nuclear magnetic resonance for chemical investigations of molecules; N.M. Iyevskaya spoke on the same subject. V.L. Tal'roze gave an account of radio-spectroscopic devices, E.I. Fedin reviewed new methods to investigate the molecular and the crystalline structure of solids (investigations in the laboratory of Kitaygorodskiy (INEOS AN SSSR)), K.V. Vladimirskiy reported on investigations of the chemical displacements in hydrogen and fluorine as well

Card 3/4

Physical Methods of the Investigation of Molecule  
Structure

SOV/53-66-1-7/11

as in other nuclei which exhibit a magnetic moment. M. A. Yel'yanhevich reported on the development of spectroscopical methods, E.V. Shpol'skiy on the investigation of weak effects by means of methods basing upon the magnetic resonance, L.L. Dekabrun on "spin-echo" methods, Ya.G.Dorfman on magneto-chemistry, M.A.Yel'yanhevich on the contact between various branches of research, and V.L.Tal'roz. on mass spectrometrical methods for the investigation of the molecule structure. Finally V.N.Kondrat'yev, Member, Academy of Sciences, gave the concluding address.

1. Molecules--Structural analysis
2. Laboratory equipment

Card 4/4

5-2-VIN, 2.1.  
LAZAREV, Petr Petrovich, akademik [deceased]. Prinsipali uchastiye:  
BERNSHTAYN, L.B.; FADIN, B.I.; SHMIDT, V.V.. KITAYGORODSKIY,  
A.I., prof., otv.red.; POLENOVA, T.P., tekhn.red.

[Energy, its sources on the earth and its origin] Energiia,  
ee istochniki na zemle i ee proiskhozhdenie. Moskva, Izd-vo  
Akad.nauk SSSR, 1959. 274 p. (MIRA 13:2)  
(force and energy)

AUTHORS: Fedin, E. I., and Konstantinov, Yu. S.  
 TITLE: Apparatus for Observing Nuclear Quadrupole Resonance  
 (Apparatura dlya nablyudeniya yadernogo kvadrupol'nogo rezonansa)

SOV/120-59-2-7/50

PERIODICAL: Priroda i tekhnika eksperimenta, 1959, Nr 2, pp 27-30  
 (USSR)

ABSTRACT: A sensitive quadrupole spectrometer is described; the second derivative of the signal is recorded by using a phase-sensitive system to detect the second harmonic of a small-amplitude frequency modulation (double frequency modulation is used). Eq (1) defines the interaction energies of the nuclear quadrupole moment. The system is a modification of those described by Livingston et al (Refs 8 and 9). Eq (2) defines the voltage change in the circuit in terms of the (small) frequency deviation, etc. from which it follows that the second harmonic has an intensity given by Eq (3). Then Eq (4) gives the amplitude if the signal has the usual dispersion shape. Eq (5) gives the optimal frequency deviation (that which results in only 5% contribution from the fourth derivative). The next section deals with frequency deviations that exceed the line width; Eqs (6a) and

Card 1/2

AN SSSR  
 ds, Ac.Sc.

SOV/120-59-2-7/50

Apparatus for Observing Nuclear Quadrupole Resonance

(6b) then give the output. This method gives better sensitivity in detecting the line, but cannot give the line width. The circuit is that of Ref 10 (Hopkins') modified to suit Soviet valves. Fig 5 shows the signals recorded from the  $^{35}\text{Cl}$  in 3 cc of polycrystalline sodium perchlorate at 29.9 Mc/s with scan amplitudes respectively smaller (left) and larger (right) than the line width.

Card 2/2 There are 5 figures and 12 references, of which 1 is German, 1 French, 7 are English and 3 are Soviet.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy AN SSSR  
(Institute of Elemental-organic Compounds, Ac.Sc.  
USSR)

SUBMITTED: July 12, 1958



AUTHORS: Fedin, E. I. and Semin, G.K. SCV/109-4-1-17/30

TITLE: A Nuclear Quadrupole Radio-spectrometer (Yadernyy kvadrupol'nyy radiospektrometr)

PERIODICAL: Radiotekhnika i Elektronika, 1959, Vol 4, Nr 1, pp 127 - 128 (USSR)

ABSTRACT: The authors tried to devise an equipment for determining the quadrupole resonance, such that it could be constructed by using the standard available elements. It was finally found that satisfactory results could be obtained by employing a quadrupole radio-spectrometer of the type shown in the block schematic of Figure 1. In this, the investigated substance was situated in a brass container at the end of a coaxial line. The container housed the coil of the oscillator tank; a Hopkins-type oscillator-detector (Refs 1 and 2) was employed as the source of the radio-frequency energy and the detector of the nuclear signal. The variable capacitors of the tank circuit were such as to permit the coverage of a range from 25 to 37 Mc/s, while using the same coil. The anode circuit was supplied from a battery, while the heater was fed from an accumulator. In order to obtain an oscillo-

Card1/3

SOV/109-4-1-17/30

A Nuclear Quadrupole Radio-spectrometer

graphic display of the signal, the frequency of the tank circuit was varied by means of an electrodynamic vibrating capacitor (type RV-1); this type of modulator resulted in a high resolving power of the spectrometer; this was of the order of  $10^{-6}$ , which was better than the minimum required in the experiment. The equipment was used for many months and proved successful in operation. An oscillogram of the signal and noise for the absorption line of  $Cl^{35}$  in sodium chlorate is shown in Figure 2. The work described in this paper represents only the first stage of the investigations which are being carried out under the leadership of Professor A.I. Kitaygorodskiy in the Laboratory of X-ray Analysis of the INEOS of the Soviet Academy of Sciences. There are 2 figures and 2 English references.

Card 2/3

A Nuclear Quadrupole Radio-spectrometer SOV/109-4-1-17/30

ASSOCIATION: Institut elementoorganicheskikh sovedineniy AN SSSR  
(Institute of Organic Elemental Compounds, AS USSR)

SUBMITTED: May 26, 1958

Card 3/3

24(4)

SOV/25-59-11-14/38

AUTHORS: Kitaygorodskiy, A.I., Professor, Doctor of Physico-Mathematical Sciences, Fedin, E.I., Scientific Worker

TITLE: New Spectroscopy

PERIODICAL: Nauka i zhizn' 1959, Nr 11, p 35 - 40 (USSR)

ABSTRACT: The article deals with radiospectroscopy - a new field of science by which the finest properties of matter can be analyzed. The author describes spectral analysis, the energetic structure of molecules and why atomic spectra are mainly studied in ultra-violet and visible rays. He explains the difficulties arising when studying the spectra of complex molecules, stating that the atom itself has a rich optic spectrum which consists of several dozens of lines. On the spectrogram of the molecule, these spectra are superimposed one on the other, thus complicating the deciphering. Moreover, the spectral analysis in visible and ultra-violet rays is too rough an instrument for investi-

Card 1/5

SOV/25-59-11-14/38

New Spectroscopy

gating the closely arranged energetic levels of complex molecules. The author illustrates by an example the possibilities offered by infra-red spectroscopy which are also limited. For studying complex molecules containing not only fluorine, but also many elements which are widely used by modern chemistry, it is necessary to find new more closely-arranged energy levels. The author writes about two resonances: 1) the electronic paramagnetic resonance (EPR) and 2) the nuclear magnetic resonance (NMR). The electronic paramagnetic resonance was discovered by the Soviet physicist Ye.K. Zavoyskiy in 1944, the nuclear magnetic resonance by two American physicists in 1946. The combined application of infrared spectroscopy and nuclear magnetic resonance make it possible to fully determine the structure of a molecule. The discovery of Ye.K. Zavoyskiy made it possible to at once notice even small concentrations of molecular particles, the so-called free radicals, which is very important for

Card 2/5

✓

SOV/25-59-11-14/38

New Spectroscopy

many chemical reactions. The method EPR was successfully employed in the laboratory of the Corresponding Member of the AS USSR V.V. Voyevodskiy of the Institut khimicheskoy fiziki (Institute of Chemical Physics) for studying reactions caused by radioactive radiation. In 1950, the YaMR was followed by the appearance of the nuclear quadrupole resonance (YaKR). The main difficulty in the study of the quadrupole resonance is the separation of very weak signals from noises. At the Laboratory of Professor A.I. Kitaygorodskiy, the work is in progress to increase the sensitivity of quadrupole spectrometers. Much experimental material has already been collected which makes it possible to compare the characteristics of chemical combination of the nucleus of chloride in hundreds of different compounds. Equal work is being done with the nuclei of bromine, iodine, nitrogen, sulfur and antimony. It must be mentioned that these interesting data have been obtained without screening with

Card 3/5

SOV/25-59-11-14/38

New Spectroscopy

a magnetic field, the stabilization of which creates so many difficulties in the YaMR (nuclear magnetic resonance). The second important property of the YaKR consists in the fact that its lines are narrow and legible only if the substance is in a solid state. The YaMR shows a reverse situation: its lines can be observed clearly and easily in fluids, but they expand and become dim in a solid state. A nuclear magnetic radio-spectrometer of super-high efficiency as shown in a picture is used for the investigation of chemical shifts of the proton resonance and permits in many cases to determine exactly the structure of the compound within 10 - 15 minutes. The laboratory of roentgenostructural analysis of the Institute of Elemental Organic Compounds of the AS USSR under the heading of Professor A.I. Kitaygorodskiy has created

Card 4/5

✓

SOV/25-59-11-14/38

New Spectroscopy

a new scientific direction - the organic crystallo-chemistry. There are 1 photograph, 9 drawings and 1 drawing on the centerfold.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute for Elemental-Organic Compounds of the AS USSR) ✓

Card 5/5



S/058/01/000/010/055/100  
A001/A101

AUTHOR: Fedin, E.I.

TITLE: Observation of nuclear quadrupole resonance in chlorine isotopes

PERIODICAL: Referativnyy zhurnal. Fizika, no.10, 1961, 166, abstract 10V375 (V  
sb. "Paramagnitny rezonans", Kazan', Kazansk. un-t, 1960, 162-164)

TEXT: The author describes the work conducted by him in the laboratory of the Institute of Element-Organic Compounds, AS USSR, on constructing an installation for observations of nuclear quadrupole resonance in chlorine. The last version of the installation has a regenerative and a superregenerative sensors. Signals are registered by means of a synchronous detector. The second derivative of the signal is registered. A signal from 5 cm<sup>3</sup> of polycrystalline para-dichlorobenzene can be recorded with such a signal-to-noise ratio which assures detection, at extended search, ~25 times more than weak absorption.

N. Pomerantsev

[Abstracter's note: Complete translation]

Card 1/1

FEDIN, E. I.

Nuclear quadrupole resonance spectrum of 1,2,3-trichlorobenzene.  
Zhur. strukt. khim. 1 no.1:124:My-Je '60. (MIRA 13:8)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.  
(Benzene--Spectra) (Nuclear magnetic resonance)

SEMIN, G.K.; FEDIN, E.I.

Applications of nuclear quadrupole resonance to crystallochemical investigations. Zhur. struk. khim. 1 no.2:252-267 JI-Ag '60.

(MIRA 13:9)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.  
(Crystals—Spectra)

68605

5.4500(B)  
24(2)

S/020/60/130/05/014/061

AUTHORS:

Kitaygorodskiy, A. I., Fedin, E. I. B013/B014

TITLE:

Variation in the Intensity of Nuclear Quadrupole Resonance in  
a Molecular Crystal Irradiated by Fast Electrons

PERIODICAL:

Doklady Akademii nauk SSSR, 1960, Vol 130, Nr 5, pp 1005-1007  
(USSR)

ABSTRACT:

The author of the paper under review made use of nuclear quadrupole resonance for indicating radiation damages of polycrystalline samples of n-dichlorobenzene which were exposed to different doses of 750-keV electron radiation. Resonance was determined by means of a frequency-modulated quadrupole radio-spectrometer with synchronous detection and signal recording by means of a recording millivoltmeter. The quadrupole resonance line was recorded several times for each sample (cf Fig 2). These lines have a "saturation region" when the increase in the irradiation dose no longer influences the intensity of the quadrupole resonance signal. This region corresponds to an unexpectedly low diminution of the signal intensity compared to the signal intensity of the nonirradiated sample ( $A/A_0 = 0.75$ ). A considerable decrease of the signal ( $A/A_0 = 0.3$ ) was achieved

Card 1/4

68605

Variation in the Intensity of Nuclear Quadrupole Resonance in a Molecular Crystal Irradiated by Fast Electrons S/020/60/130/05/014/061 B013/B014

for a sample which had been cooled insufficiently during irradiation. Thus, fusion centers developed. In this case, the quadrupole resonance frequency remained unchanged. This fact and earlier obtained results are easily explained by the assumption that the chemical transformation occurring under the action of  $\gamma$ - and  $\beta$ -radiation can proceed inversely only at the crystal sites where the packing density is lower than in a perfect lattice. At sites of normal packing the position of molecule fragments obtained by the disruption of the chemical bond remains strictly fixed, and the bond is immediately re-established. After the molecules in the thin surface layer of the blocks, at the crack boundaries, etc have been destroyed, a further increase of the radiation dose has no effect on the intensity of the quadrupole resonance signal. When the sample is heated,  $\Delta/\Delta_0$  decreases because the number of insufficiently packed and completely free molecules increases the fusion centers.

Card 2/4

68605

Variation in the Intensity of Nuclear Quadrupole Resonance in a Molecular Crystal Irradiated by Fast Electrons S/020/60/130/05/014/061  
B013/B014

$(A_0 - A)/A = N_1/N$  holds.  $N_1$  denotes the number of molecules at loosely packed sites, and  $N$  is the number of normally packed molecules. Reasonable values are obtained by estimating the block sizes (as, e.g.,  $4 \cdot 10^4$  molecules per block). Cavities, cracks, etc. are a little more than 4% of the crystal volume. This is in close agreement with data obtained from X-ray structural analyses. A carefully bred single-crystal sample with a fairly perfect lattice must have a considerably higher stability against ionizing  $\gamma$ - and  $\beta$ -radiation than has a polycrystalline sample. It is suggested to verify this problem by the same method. The authors thank B. L. Tsetlin, A. P. Bayev, and P. Ya. Glazunov for their assistance in the irradiation of samples. There are 2 figures and 4 references, 1 of which is Soviet.

ASSOCIATION: Institut elementorganicheskikh soedineniy Akademii nauk SSSR  
(Institute of Elemental-organic Compounds of the Academy of Sciences of the USSR)

Card 3/4

68665

Variation in the Intensity of Nuclear Quadrupole  
Resonance in a Molecular Crystal Irradiated by  
Fast Electrons

S/020/60/130/05/014/061  
B013/B014

PRESENTED: October 6, 1959, by I. V. Obreimov, Academician

SUBMITTED: October 2, 1959

4

Card 4/4

FEDIN, E. I.

Cand Phys-Math Sci - (diss) "Study of molecular crystals by the nuclear quadripole resonance method." Moscow, 1961. 12 pp; (Inst of Chemical Physics of the Academy of Sciences USSR); 200 copies; free; bibliography at end of text (15 entries); (KL, 5-61 sup, 174)



FEDIN, E.I.; KITAYGORODSKIY, A.I.

Investigation of solid solutions of certain organic compounds by  
the nuclear quadrupole resonance method. Kristallografiia 6 no.  
3:406-412 My-Je '61. (MIRA 14:8)

1. Institut elementoorganicheskikh soedineniy AN SSSR.  
(Nuclear magnetic resonance and relaxation)  
(Solid solutions) (Organic compounds)

KITAYGORODSKIY, A.I., prof.; FEDIN, E.I.

Molecular radio signals. Priroda 50 no.11:44-52 N '61.  
(MIRA 14:10)

1. Institut elementroorganicheskikh soyedineniy AN SSSR (Moskva).  
(Microwave spectroscopy) (Molecular spectra)

FEDIN, E.I.; PETROVSKIY, P.V.; REVENKO, O.M.; YUR'YEV, Yu.K.

Nuclear magnetic resonance spectra of homologs of thiophane and  
pentamethylene sulfide. Neftekhimiia 2 no.3:270-274 My-Je  
'62. (MIRA 15:8)

1. Institut elementoorganicheskikh soyedineniy AN SSSR i  
Moskovskiy gosudarstvennyy universitet.  
(Thiophene--Spectra) (Thiopyran--Spectra)

TSVENKIN, D.Ya.; FEDIN, E.I.

Second moment of the nuclear magnetic resonance line in a sample  
with an axial texture. Zhur.strukt.khim. 3 no.1:101-102 Ja-F '62.  
(MIRA 15:3)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.  
(Nuclear magnetic resonance and relaxation)

39982

S/181/62/004/008/027/041  
B108/B102

24.7000

AUTHORS: Waugh, J. S., and Fedin, E. I.

TITLE: Determination of the barriers of delayed rotation in solids

PERIODICAL: Fizika tverdogo tela, v. 4, no. 8, 1962, 2233 - 2237

TEXT: The potential barrier  $V_0$  delaying the rotation (reorientation) of molecules or ions is calculated approximately. The frequency of reorientation is usually assumed as  $\omega_0 = \omega_0 \exp(-V_0/kT_0)$ . The experimental part can be considerably reduced if the temperature dependence of the nuclear magnetic resonance line width is employed in the theory, for  $\omega_0 \approx \Delta$  at  $T_0$  ( $\Delta$  - "excess" line width). Therefore,  $\Delta \approx n\sqrt{V_0/2T_0} \exp(-V_0/kT_0)$ , from which  $V_0$  can be determined. One has only to determine the temperature  $T_0$  at which the lines start to contract, and the amount by which the line width changes. The results obtained in this way agree well with those of other methods. In particular, the relation  $V_0(\text{kcal/mole}) \approx 37T_0(^{\circ}\text{K})$  can

Card 1/2

Determination of the barriers ...

S/181/62/004/008/027/041  
B108/B102

be used with an accuracy of about 10%. There is 1 table.

ASSOCIATION: Institut elementoorganicheskikh soedineniy AN SSSR Moskva  
(Institute of Elemental Organic Compounds AS USSR Moscow)

SUBMITTED: April 11, 1962

Card 2/2

KITAYGORODSKIY, Aleksandr Isaakovich; FEDIN, Erlen Il'ich; SHUSTOVA,  
I.B., red.; RAKITIN, I.T., tekhn. red.

[Atomic structure and the properties of solids] Atomnoe  
stroenie i svoistva tverdykh tel. Moskva, Izd-vo "Znanie,"  
1963. 47 p. (Narodnyi universitet kul'tury: Estestvenno-  
nauchnyi fakul'tet, no.6) (MIRA 16:9)  
(Matter--Constitution) (Solids)

LYUBIMOV, A.N.; VARENIK, A.F.; FEDIN, E.I.

Nuclear magnetic resonance spectrometer of high resolution of  
the central automation laboratory. Zhur.strukt.khim. 4 no.6:  
919-923 N-D '63. (MIRA 17:4)

1. TSentral'naya laboratoriya avtomatiki, Institut elementoorga-  
nicheskikh soyedineniy AN SSSR.



NESMEYANOV, A.N., akademik; KOCHETKOVA, N.S.; PETROVSKIY, P.V.; FEDIN, E.I.

Pentaethanodiferrocene. Dokl. AN SSSR 152 no.4:875-878 O '63.  
(MIRA 16:11)

1. Institut elementoorganicheskikh soedineniy AN SSSR.

L 17838-65 EWT(1)/EEG(t) Feb IJP(c)/SSD(a)/AEDC(b) S/0030/64/000/011/0010/0013  
 ACCESSION NR: AF5000259

AUTHOR: Pavlov, B. N.; Safin, I. A.; Semin, G. K.; Fedin, E. I.; Shtern, D. Ya.

TITLE: Pulse method for investigating nuclear quadrupole resonance ;

SOURCE: AN SSSR. Vestnik, no. 11, 1964, 40-43

TOPIC TAGS: nuclear quadrupole resonance, spectrometer

ABSTRACT: The advantages of pulse methods for investigating nuclear quadrupole resonance (NQR) over steady-state methods are discussed. Steady-state methods can be used successfully only for samples with very perfect crystal structure. In these cases the equivalent Q of the line  $Q_{eq} = \frac{\nu}{\Delta\nu}$ , where  $\nu$  is the NQR frequency and  $\Delta\nu$  is the line width. Broadening of the NQR line, caused by the crystal structure which is often unremovable, leads not only to a decrease in the amplitude but also to a decrease in sensitivity. In these cases pulse methods are required. As a result, steady-state methods are not suitable. However, the sensitivity of a pulse spectrometer is also not only

Card 1/3

L 1783F-65

ACCESSION NR: AP5000259

constant with line width, since the initial amplitude of the nuclear induction signal and the maximum amplitude of the quadrupole spin echo signal are proportional to the integral NQR signal intensity and are only slightly dependent on the line width. It has been shown that the gain in sensitivity of the pulse method over the steady-state method is

$$4\pi \sqrt{\frac{T_1}{T_2^*} \frac{\Delta\nu_{ss}}{\Delta\nu_p} \frac{F_{ss}}{F_p}}$$

where  $T_1$  is the spin-lattice relaxation time,  $T_2^*$  is the parameter of the NQR line width,  $\Delta\nu_{ss}$  is the pass band of the steady-state spectrometer amplifier,  $\Delta\nu_p$  is the pass band of the pulse spectrometer receiver, and  $F_{ss}$  and  $F_p$  are the respective receiver noise factors. As an example of the gain in sensitivity, the quadrupole echo signal from the  $As^{75}$  nuclei in  $As_2S_3$  is shown. This signal is unobserved when using the steady-state method. Several examples are also given of frequency measurements and resolution using the pulse method which are better than those obtained by using the steady-state spectrometer. The basic equations and 1 diagram.

Card 2/3

L 17838-65

ACCESSION NR: AP5000259

ASSOCIATION: Institut radioelektroniki, Kazanskiy fiziko-tekhnicheskiy institut  
Radioelectronics Institute, Kazan Institute of Physics and Technology : Institut  
fiziko-tekhnicheskoye soveshcheniy, Akademicheskaya 38/2 Kazan, RSFSR  
Academy of Sciences USSR)

SUBMITTED: 00

ENCL: 00

SUB CODE: NP, SS

NO REF SOV: 000

OTHER: 000

Card 3/3

SETKINA, V.N.; GINZBURG, A.G.; FEDIN, E.I.; KURCHANOV, D.N.

Hydrogen isotope exchange in hexa-substituted benzenes. Dokl. AN SSSR  
158 no.3:671-674 S '64. (MIRA 17:10)

1. Institut elementoorganicheskikh soyedineniy AN SSSR. 2. Chlen-  
korrespondent AN SSSR (for Kursanov).

PAVLOV, B N.; SAFIN, I.A.; SEMIN, G.K.; FEDIN, E.I.; SHTERN, D.Ya.

Pulse method of nuclear quadrupole resonance study. Vest. AN  
SSSR 34 no.11:40-43 N '64. (MIRA 17:12)

1. Kazanskiy fiziko-tekhnicheskiy institut i Institut elemento-  
organicheskikh soedineniy AN SSSR.

BRAYYER, L.; PETROVSKIY, P.V.; FEDIN, E.I.

Dimensionality units in high-resolution spin-Hamiltonian nuclear magnetic resonance. Zhur. struk. khim. 6 no.3:456-457 My-Je '65.

Determination of the transfer number in high-resolution nuclear magnetic resonance spectra. Ibid.:454-456

(MIRA 18:8)

1. Institut elementoorganicheskikh soedineniy AN SSSR.

L 61206-45 EAP(a)/EAP(b)/EAP(c) IJP(c) UR/0020/65/163/003/0659/0662  
 ACCESSION NR: AP5019432

AUTHOR: Mesnyanov, A. N. (Academician); Fedin, E. I.; Petrovskiy, N. I.;  
 Dubovitskiy, V. A.; Nogina, O. V.; Lazareva, N. A.

... of the nuclear magnetic resonance method for studying the nature of  
 titanium-cyclopentadienyl bonding in the cyclopentadienyl derivatives of titanium

SOURCE: AN SSSR. Doklady, v. 163, no. 3, 1963, 659-662

TOPIC TAGS: ferrocene, titanium, cyclopentadiene, nuclear magnetic resonance

ABSTRACT: The effect of chlorine atoms in compounds of a general formula  $C_5H_5TiCl_n$  (where  $n = 0, 1, 2, 3$ ) on the nature of the Ti-cyclopentadienyl bond was studied by high resolution NMR technique. The NMR spectra were recorded with a spectrometer at 40 mc with proton resonance stabilization. Tetramethylsilane was used as a reference. The chemical shift was  $+1 \cdot 10^{-8}$ . Ability of cyclopentadienyl to form a complex (reaction with  $Fe^{2+}$ ) correlates with the proton chemical shift in high resolution NMR spectra. The greater the electron density on the cyclopentadienyl ring, the earlier is the formation of the complex.

Card 1/2



64136-65

ACCESSION NR: AP5010432

Items attached to this report

are as follows:

1. The report

1. The report

Card 2/2

ANDRIANOV, K.A., akademik; FEDIN, E.I.; KOTRELEV, G.V.; GORELAYA, I.V.

High-resolution proton magnetic resonance of organocyclosilazanes.  
Dokl. AN SSSR 163 no.4:877-879 Ag '65.

(MIRA 18:8)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

NESMEYANOV, A.N., akademik; KRITSKAYA, I.I.; FEDIN, E.I.

Synthesis and properties of  $\pi$ -allylcarbonyl complexes of iron.  
Dokl. AN SSSR 164 no.5:1058-1061 0 '65. (MIRA 18:10)

1. Institut elementorganicheskikh soyedineniy AN SSSR.

PETROVSKAYA, L.I.; BURLACHENKO, G.S.; FEDIN, E.I.; BAUKOV, Yu.I.;  
LUTSENKO, I.F.

Proton magnetic resonance of esters of metalated (Si, Ge, Sn)  
acetic acid and O-silyl-O-alkylketene acetals. Zhur.strukt.khim.  
6 no.5:781-783 S-O '65. (MIRA 18:12)

1. Institut elementoorganicheskikh soedineniy AN SSSR i  
Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova.  
Submitted April 29, 1965.

BABARE, L.V.; PETROVSKIY, P.V.; FEDIN, E.I.

Determination of the structure of organosilicon derivatives of ferrocene by the nuclear magnetic resonance method. Zhur. strukt.khim. 6 no.5:783-785 8-0 '65.

(MIRA 18:12)

1. Institut elementoorganicheskikh soedineniy AN SSSR. Submitted April 14, 1965.

SEMYREV, I.K.; DOMEER, A.D.; BARSKAYA, A.B.; KHMUTINA, L.M.; BRAYSER, I.;  
PETROVSKIY, P.V.; FEDIN, E.I.

Program of computing nuclear magnetic resonance spectra of high  
resolution in the case of strong spin-spin interaction. Zhur.  
strukt. khim. 6 no. 4:625-634 J1-Ag '65 (MIRA 19:1)

1. Nauchno-issledovatel'skiy institut raznoy promyshlennosti  
i Institut elementov organicheskikh soedineniy AN SSSR. Submitted  
April 14, 1965

L 05173-67 EWT(m) EWP(+)- NW/JW/AM  
ACC NR: AP7000726 SOURCE CODE: UR/0062/66/000/006/1031/1038

KNUNYANTS, I. L., CHEBURKOV, Yu. A., BARGAMOVA, M. D., FEDIN, E. I., PETROVSKIY, P. V., Institute of Heteroorganic Compounds, Academy of Sciences USSR (Institut elementoorganicheskikh Soedineniy AN SSSR)

"Perfluorodimethylketene, Communication 7. Structure of the Dimer"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (News of the Academy of Sciences USSR, Chemical Series), No 6, 1966, pp 1031-1038

Abstract: Perfluorodimethylketene, in contrast to other known ketenes, forms a linear dimer under the action of triethylamine. The dimer was also produced by two other methods: 1) the reaction of an equimolar mixture of hexafluoroisobutyl chloride and ethylamine; 2) by the action of triethylamine or cesium fluoride on perfluoromethacrylyl fluoride. In the latter case the reaction mixture was treated with methanol, yielding the methanolysis product of the dimer and also the known methyl ester of hexafluoroisobutyric acid and the methyl ester of alpha-trifluoromethyl-beta, beta-difluoro-beta-methoxypropionic acid. The structure of the dimer of perfluorodimethylketene as the bis-fluoride of perfluoro-(alpha, alpha, gamma-trimethylglutaconic) acid was confirmed by its reactions and infrared spectrum. The reaction mechanism proposed for the dimerization includes isomerization of the ketene to the more stable perfluoromethacrylyl fluoride. A new reaction was discovered: linear dimerization of functional derivatives of perfluoromethacrylic and difluoromethylenemalononic acids. Orig. art.

has: 1 figure, 9 formulas and 2 tables. [JPRS: 37,023]

TOPIC TAGS: fluorinated organic compound, isomerization

SUB CODE: 07 / SUBM DATE: 07Dec65 / ORIG REF: 013 / QTH REF: 002  
Card 1/1 vmb 542.91 + 541.452 + 546.16

0923 1891

L 35328-66 EWT(m)/EWT(j) RM  
ACC NR: AP5026835

SOURCE CODE: UR/0020/66/166/002/0349/0352

AUTHOR: Andrianov, K.A. (Academician); Fedin, E.I.; Lavygin, I.A.; Gorskaya, N.V.;  
Lavrukhin, B.D. 37  
B

ORG: Institute of Organoelemental Compounds, AN SSSR (Institut elementov organicheskikh soedineniy AN SSSR)

TITLE: Reaction of 8-hydroxyquinoline tributoxytitanium<sup>1</sup> with triethyl hydroxysilane<sup>1</sup>

SOURCE: AN SSSR. Doklady, v. 166, no. 2, 1966, 349-352

TOPIC TAGS: spectrometer, reaction mechanism, titanium compound, silane, esterification; chemical stability

ABSTRACT: A nuclear magnetic resonance spectrometer was used for studying the mechanism of the reaction between 8-hydroxyquinoline tributoxytitanium and triethyl hydroxysilane. Spectra are given for various reagent concentrations. The first event in the reaction is apparently coordination of the oxygen in the hydroxyl radical of the triethyl hydroxysilane with a titanium atom which results in transesterification by the mechanism of bimolecular nucleophilic substitution. Substitution of a single butoxyl group probably results in such an unstable molecule that disproportionation takes place with the formation of stable compounds having tetravalent and hexacoordinate saturated titanium atoms. The experimental procedure is described.

Orig. art. has: 1 figure and 1 table. / JPRS: 36, 4557  
SUB CODE: 07 / SUBM DATE: 21Jul65 / ORIG REF: 002

UDC: 546.824

Card 1/1 *ldh*



ACC NR: AP7003534

SOURCE CODE: UR/0386/67/005/001/0016/0017

AUTHOR: Fedin, E. I.; Gorskaya, N. V.

ORG: Institute of Organoelemental Compounds, Academy of Sciences SSSR (Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR)

TITLE: Irreversibility of transition of NMR signals through a weak field in some molecular crystals

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Piv'ma v redaktsiyu. Prilozheniye, v. 5, no. 1, 1967, 16-17

TOPIC TAGS: nuclear magnetic resonance, naphthalene, anthracene, spin relaxation, spin system, spin lattice relaxation

ABSTRACT: The authors performed an experiment with naphthalene single crystals, similar to the experiment of R. V. Pound (Phys. Rev. v. 81, 156, 1951), wherein the sample was demagnetized in a weak (terrestrial) field. Unlike the earlier results, which showed reversibility of the transition through a weak field and demonstrated the existence of a spin temperature in LiF crystals, in naphthalene the transition through the weak field turned out to be irreversible for the NMR signal: a time  $t \approx 1$  sec turned out to be sufficient for total disorientation of the nuclear spins in these crystals; subsequent establishment of the equilibrium magnetization and a corresponding growth of the NMR signal occurred, as in the initial magnetization, with a time constant  $\tau \sim 10^3$  sec. Neither variation of the intensity of the rf field

Card 1/2

ACC NR: AP7003534

over a wide range, nor defects in the crystal lattice, have any influence on this effect. The behavior of the NMR signal in anthracene and biphenyl was similar. Control experiments with molecular crystals and polymers whose molecules contain no closed electron delocalization loops or have additional intramolecular degrees of freedom (paradichlorobenzene, hexamethylbenzene, oxyacetate of beryllium, paraffin, polyethylene, etc.) disclosed full reversibility of the transition of the NMR signal through a weak field. This irreversibility is qualitatively treated as an indication that in the tested naphthalene, biphenyl, and anthracene, energy is effectively pumped out from the nuclear-spin system into the lattice when  $H < H_{loc}$ . A theoretical and experimental study of this effect is being continued. The authors thank A. I. Kitaygorodskiy for continuous interest, A. P. Amiton, B. A. Kvasov, N. O. Okulevich, and N. I. Okhlobystin for help with the measurements, and R. M. Myasnikov and L. A. Fedorov for supplying the samples.

SUB CODE: 20/ SUBM DATE: 01Oct66 OTH REF: 003

Ca:d 2/2

DAVIDOV, A.S., polkovnik; KORSHUNOV, V.N., polkovnik; KOZLOV, N.D., podpolkovnik; LUKANIN, Ye.A., polkovnik; NESIN, A.A., polkovnik; POZMOGOV, A.S., polkovnik; PUTINTSEV, A.I., podpolkovnik; SIDORENKOV, P.I., polkovnik; SYTOV, L.G., polkovnik; FEDIN, G.R., polkovnik; CHEREDNICHENKO, V.T., polkovnik; CHERNYSHEV, F.I., kontr-admiral zapasa; SHATURNYY, A.N., polkovnik; ROMANOV, I.M., red.

[Methodological materials for political instruction] Metodicheskie materialy k politicheskim zaniatiyam. Moskva, Voenizdat, 1965. 240 p. (MIRA 18:7)

1. Russia (1923- U.S.S.R.) Glavnoye politicheskoye upravleniye Sovetskoy Armii i Voenno-Morskogo Flota. Upravleniye propagandy i agitatsii.

MOSKALEV, A.N., kand. tekhn. nauk; FILATOV, N.V., kand. tekhn. nauk;  
POPOV, V.M., inzh.; FEDIN, I.A., inzh.

Machines for jet piercing with a ring system of cooling.  
Gor. zhur. no.5:45-46 My '64. (MIRA 17:6)

MOSKALEV, A.N., dotsent; FILATOV, N.V., dotsent; POPOV, V.M., inzh.; FEDIN, I.A.,  
Inzh.

Efficiency of jet + rches in the jet piercing of rock. Izv.vys.ucheb.  
zav.;gcr.zhur. 7 no.9:68-72 '64. (MIRA 18:1)

1. Sibirskiy metallurgicheskiy institut imeni S. Ordzhonikidze. Re-  
komendovana kafedroy gornykh mashin i rudnichnogo transporta.

L 57831-65 ENP(k)/EWA(c)/EWT(m)/ENP(b)/T/ENP(v)/ENP(t) Pf-4 JD/HK  
ACCESSION NR: AP5012645

UR/0135/65/000/000/0034/0034

AUTHOR: Moskalev, A. N. (Candidate of technical sciences); Filatov, N. V. (Candidate of technical sciences); Popov, V. M. (Engineer); Fedin, I. A. (Engineer)

TITLE: Burning openings in 200-400 mm thick metal with a rocket-type torch

SOURCE: Svarochnoye proizvodstvo, no. 5, 1965, 34

TOPIC TAGS: flame cutting, cutting torch, cast iron torch cutting

ABSTRACT: Results are given of tests on burning openings in metal (cast iron shafts, molds, etc) with thicknesses of 200 to 400 mm with a aerosene-oxygen flame. The construction and operation of the rocket type torch is described. The burning openings with a diameter of 300-400 mm are obtained at a rate of 10-15 mm/hr. The energy consumption is 25 to 50% less than in oxygen torch cutting. Openings can be made in shafts with a diameter of 300-400 mm and in cast iron molds with thicknesses of 200-400 mm with the torch maintained in one position. The results are illustrated by a table.

Card 1/2

L 57831-65

ACCESSION NR: AP5012645

2

ASSOCIATION: Filial instituta mekhaniki AN UkrSSR (Affiliate of the Institute of  
Mechanics, UkrSSR); Hbirskiy metallurgicheskiy institut (Siberian Metallurgical  
Institute)

SUBMITTED: 00

ENCL: 00

SUB CODE: MM

NO REF SOV: 001

CTHER: 000

*hsp*  
Card 2/2

MOSKALEV, A.N., kand. tekhn. nauk; FILATOV, N.V., kand. tekhn. nauk; POPOV,  
V.M., inzh.; FEDIN, I.A., inzh.; BURLO, Ye.A., inzh.

Cast iron cutting without flux. Lit. proizv. no.9:22-23 S '65.  
(MIRA 18:10)



MOSKALEV, A.N., kand. tekhn. nauk; FILATOV, N.V., kand. tekhn. nauk;  
FEDIN, I.A., inzh.; POPOV, V.M., inzh.; BURLO, Ye.A., inzh.

Tests in cutting high-alloyed steels without flux. Svar.  
proizv. no.9:26-27 S '65. (MIRA 18:9)

1. Dnepropetrovskiy filial im. AN UkrSSR (for Moskaev).
2. Sibirskiy metallurgicheskiy institut (for all except Moskaev).

KURICUK, S.S.; FEDIN, I.M.

Physicochemical study of the interaction of anisil isochloro-  
cyanate with allyl and benzylamines. Zhur. fiz. khim. 39  
no.9:2293-2296 S 1965. (MLA 15:10)

1. L'vovskiy gosudarstvennyy meditsinskiy institut.

NIKOLAYEV, A.F., kand. tekhn. nauk; RUKAVISHNIKOV, S.V., kand. tekhn. nauk;  
MEDIN, I.V., inzh.

Reducing gear with power take-off for DT-54A tractors. Stroi.  
i dor. mash. 6 no. 9:23-24 S '61. (MIRA 14:10)  
(Tractors—Engines)

NIKOLAYEV, A.F., kand.tekhn.nauk; RUKAVINSHNIKOV, S.V., kand.tekhn.nauk;  
FEDIN, F.V., inzh.

The FTK-GPI-38 cutting trencher. Stroil. i dor. mash. 7 no.7:5-8 J1  
'62. (MIRA 15:7)

(Excavating machinery)